

Electronic Health Monitoring for Space Systems, Phase I

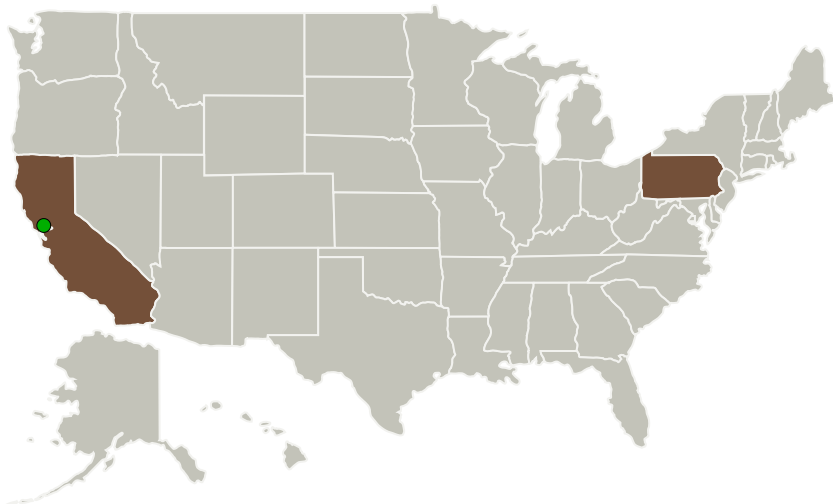
Completed Technology Project (2012 - 2012)



Project Introduction

Prognostic monitoring capabilities for space exploration aircrafts are crucial to enable safety and reliability in these platforms. Nokomis proposes to develop and mature a system which exploits electromagnetic emissions to identify degradation in avionics components and determine the probability of failure and remaining useful life (RUL). Over time, the deterioration of components under stress alters the impedances of circuits, components, integrated circuits, and other electronic subcomponents which cause changes to the electronic emission's signatures. Due to the uniqueness of emission signatures, they can be related directly to specific components within the monitored system. In this Phase I effort, representative avionics components will be artificially aged to the point of failure as they are monitored using Nokomis' AELED based Electronic Health Monitoring (EHM) system. An algorithm will be developed to model the changes in emissions over a component's lifetime, thereby determining the potential for component failure at any point in its operational lifetime.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Nokomis, Inc.	Lead Organization	Industry	Charleroi, Pennsylvania
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Pennsylvania

Project Transitions

**February 2012:** Project Start**August 2012:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/138123>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Nokomis, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

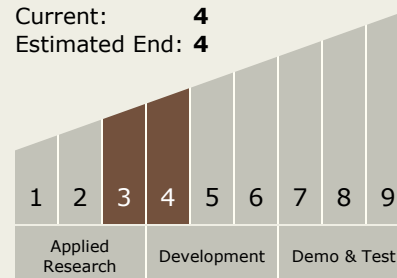
Program Manager:

Carlos Torrez

Principal Investigator:

Walter J Keller

Technology Maturity (TRL)

Start: **3**Current: **4**Estimated End: **4**

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Technology Areas

Primary:

- TX17 Guidance, Navigation, and Control (GN&C)
 - └ TX17.2 Navigation Technologies
 - └ TX17.2.1 Onboard Navigation Algorithms

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System